

La., Tex., Ill., N. J.; 9th, N. C., Ga., Fla., Mich., Tex., N. Mex., Ohio; 10th, Mass., N. C., N. J., Conn., Dak., N. Y., Ohio; 11th, Ind. Ty., Wis., Iowa, Minn., Ill.; 12th, Pa., W. Va., Iowa, Dak., Wyo., Minn., Conn., Ill., Mich., N. Y., Ohio, Va.; 13th, S. C., Tenn., N. C., Ga., Mich., Iowa, Tex., Conn., Ill., Me.; 14th, Va., Ala., N. Y., N. C., Ga., Ill., Mass., Tenn.; 15th, S. C., Pa., N. Y., N. J., Ga., Conn., Dak., Mich., Tex., Ohio, Va.; 16th, S. C., Pa., N. Y., Ga., Ind. Ty., Iowa, Minn., Conn., Ill., Ohio; 17th, Iowa, Mass., Tex., Ga., Ill., N. Y., Wis.; 19th, Ohio, Dak., Mass.; 20th, Minn.; 21st, La., Neb.; 22nd, Ala.; 23rd, W. Va., Va.; 24th, Va., Ga., Dak.; 25th, Dak., Minn., Conn., N. Y.; 26th, Mo., Minn., Mass., Mich.; 27th, Iowa, Ind., Ill., Ohio; 28th, Mich., Mass., Kan., N. Y., Va.; 29th, Pa., N. Y., Me., Ga., Ohio, Kan., Conn., Ill., Va.; 30th, Va., Ga., Iowa, Ala., N. C., Ill., Wis.; 31st, S. C., Iowa, N. C., Ga., Ohio, Fla., Dak., Ill., Ind., N. J., Va., Wis.

Auroras were observed as follows: Vevay, Ind., 2nd and 5th; West Charlotte, Vt., 7th; Dubuth, Minn., 8th, 16th and 17th; Northport, Mich., 9th; Monticello, Iowa, 10th; Cambridge, Mass., and Cleveland, Ohio, 16th; Swauzey, N. H., 17th; Bangor, Me., 18th and 30th.

Ground Currents.—Disturbances on lines of telegraph have been reported as follows: At Pike's Peak, Col., 6th; Fort Sill, Ind. Ty., 7th; Laredo, Texas, 8th, 9th and 10th; Bismarck, Dak., 24th, (line not working,) and 27th.

OPTICAL PHENOMENA.

Solar Halos.—1st, Mich.; 2nd, Me., Ohio, R. I., Conn.; 3rd, Fla.; 4th, Fla.; 6th, Ohio, Ky.; 7th, N. Y.; 8th, Ill.; 9th, La.; 10th, Iowa; 11th, Dak., Ill., Ohio, Ky., Fla., N. C., Mich.; 12th, Miss., Va.; 13th, Ga.; 14th, S. C.; 15th, N. C.; 17th, Miss., N. Y., Conn., Cal.; 18th, Me., N. C.; 20th, Conn., Mass., N. J., N. Y., S. C., R. I., Ga., N. C.; 21st, Ill., Iowa, N. Y., Vt., S. C., N. C., Conn.; 22nd, Ill., Ohio, S. C., Ky., N. C.; 23rd, Wis., S. C.; 24th, Ga.; 25th, R. I., N. C.; 26th, Fla., Ga., N. C., Conn.; 27th, Ill., Miss., Fla., Mich., N. C.; 28th, N. C., S. C., La.; 29th, N. C.; 30th, Mich.; 31st, Conn., Me., N. Y., R. I., Ga.

Lunar Halos.—1st, Conn.; 14th, Ind.; 15th, Mo.; 16th, Texas, Mo.; 17th, Mass., N. H., Ind., Ohio, Ala., Cal.; 18th, Va., S. C., N. H., N. J., Ga., Ohio, N. C.; 19th, N. J., N. C., Tenn., Va., N. Y., Ohio, Mich.; 20th, Iowa, Vt., S. C., N. H., N. C., Neb., Fla., Mo., Ala., Mich.; 21st, Ind., Iowa, Me., Mich., N. J., N. Y., Ohio, Vt., N. H., Neb., Fla.; 22nd, Mass., Mich., Ohio, Va., W. Va., N. C., Penn., Fla., Conn., Wis., Minn.; 23rd, Mass., Me., Ind., N. Y., Iowa, Conn., Mo., Penn., Ala., Minn.; 24th, Mass., Va., S. C., W. Va., Iowa, Kan., Ga.; 25th, Ill., Mass., N. Y., S. C., N. C., Ind., Fla.; 26th, Fla., Mich.; W. Va., N. C., Mo., D. C.; 27th, Mo., Ala., Ga.; 28th, Ga., S. C., N. C., Minn.; 29th, Wis.; 30th, R. I., Mo.; 31st, N. Y.

Mirage.—2nd, Olivet, Dak.; 3rd, Duluth, Minn.; 4th and 15th, Tybee Island, Ga.; 13th, Indianola, Tex.; 25th, Rochester, N. Y.

MISCELLANEOUS PHENOMENA.

BIRDS.—*Martins*, had left Morgantown, W. Va., 11th, were leaving Bellefontaine, Ohio, on the 1st, and Jacksonburg, Ohio, on the 13th. *Swallows*, had left Morgantown, W. Va., 17th; were seen flying southward in great numbers at Daytona, Fla., 14th and 21st; congregating in large numbers at Baxter Springs, Kan., 2nd; left Jacksonburg, Ohio, 23rd; Bellefontaine, Ohio, leaving 22nd. *Bobolinks*, was last seen at Vermillion, N. Y., 1st. *Wild Geese*, Sacramento, Cal., (first of season), passed, from N., 30th. *White Ducks*, were seen at Lower Brule Agency, Dak., flying S., 26th. *Herons*, were seen flying S., at Wappinger's Falls, N. Y., 26th.

INSECTS.—*Grasshoppers*, Minnesota, sixteen counties have sustained an appreciable loss from grasshoppers this year; in Kandiyohi and Chippewa, the destruction was complete, and in the remaining thirteen the ravages are estimated at $\frac{1}{2}$ to $\frac{3}{4}$ of a full crop. In a strip fifty miles in width by one hundred and twenty-five in length, extending from Otter Tail Lake to the Minnesota river, fully one fourth of the farmers raised nothing, and the remainder very little. Idaho, 7th, in Dixie valley, "hoppers" have destroyed oat crop. In Boise valley, ravages thus far only partial and local. They are somewhat worse this year, but there has been nothing approaching to the ravages in the region beyond the Rocky Mountains, Montana, Virginia City. 1st, large swarm flying northeast, first of season; Dakota, Bismarck, 2nd, abundant, 9th, very few; Yankton, 1st, 12th and 15th; Ft. Sisseton, fly SE. 1st and 2nd; Olivet, 1st, large flight of locusts, S. and SE. Iowa, Des Moines valley, grasshoppers plentiful, but doing no damage. Nebraska, North Platte, locust flying west in myriads; Emerson, SW. 7th, 8th, 9th, 25th, and NE. 10th; Plattsmouth, SW. 2nd, NW. 3rd and 4th; Clear Creek, S. 1st, W. 2nd, N. 3rd, S. 6th to 9th, N. 10th, SW. 11th, 12th, 14th; Genoa, S. 1st, 2nd, 8th, SE. 7th, S. and W. 8th to 14th, N. 19th. Utah, very little damage, except in Cache valley. Canada Ottawa, Augusta township, 7th, so numerous that farmers were cutting oats in order to save them.

Polar Bands.—Carthagena, Ohio, 1st, 6th, 7th, 11th; Gardiner, Me., 2nd, 20th; Wythville, Va., 5th, 6th, 9th, 22nd, 23rd, 25th, 26th, 27th; Auburn, N. H., 8th, 13th; Tabor, Ohio, 18th; Portsmouth, N. C., (from SW. to NE.) 20th; Woodstock, Vt., 21st, 23rd; Rowe, Mass., 23rd; Guttenburg, Iowa, 25th; Jacksonburg, Ohio, 25th; Freehold, N. J., 26th, 30th; Charlestown, S. C., 29th.

Sunsets.—The characteristics of the sky, as indicative of approaching fair or foul weather, have been observed daily at sunset, at all Signal Service stations. The monthly means from 104 stations show that 75 doubtful cases or blanks were recorded, and that out of the remaining 3,149 cases, 2,521 or 80.6 per cent. have been followed by the expected weather.

Forest-fires.—Wisconsin, 5th, the villages of Eaton and Benjamin, Brown Co., were almost totally destroyed; the forest has been burning for five weeks, destroying millions of feet of lumber and thousands of dollars of other property; one family is said to have perished and four more families are missing; a large number of animals were also burned. Michigan, 13th, Roscommon Co., large forest-fires raging in this region, destroying thousands of dollars worth of pine timber. Canada, 6th, Bertie Station, cedar bush burned over six miles. Morristown, Dak., 20th; Bismarck and Lower Brule Agency, Dak., 25th; Monticello, Iowa, S., 27th; Fort Sisseton, Dak., N. and E., 28th and 29th; Oregon, Mo., (in Kansas) 31st.

Meteors.—Monticello, Iowa; North Volney, N. Y.; Tybee Island, Ga. 2nd, Monticello and Davenport, Iowa; Linden, N. J.; Tybee Island, Ga.; La Crosse, Wis. 3d, Cresco and Davenport, Iowa; North Volney, N. Y.; Savannah, Ga. 4th, Southington, Conn.; Cresco and Davenport, Iowa; Litchfield, Mich.; Green Castle, Pa.; Savannah and Tybee Island, Ga. 5th, Vevay, Ind.; Atco, N. J.; Carthagena, Ohio; Santa Fe, N. Mex. 6th, Southington, Conn.; Daytona, Fla.; Green Castle, Pa.; Wantoma and La Crosse, Wis. 7th, Davenport, Iowa; Leavenworth, Kans.; Uvalde, Tex. 8th, Como, Ill.; Oregon, Mo.; Norfolk, Neb.; Linden, N. J.; Louisville, Ky.; Keokuk and Davenport, Ia.; Leavenworth, Kans.; Breckenridge, Minn.; Jacksonsburg, O. 9th, Cresco, Dubuque, Keokuk and Davenport, Iowa; Brookhaven, Miss.; Oregon, Mo.; Carthagena and Jacksonburg, Ohio; Wantoma, Wis.; Morgantown, W. Va.; Louisville, Ky.; North Platte, Neb.; Santa Fe, N. Mex.; Duluth, Minn. 10th, Cresco, Monticello, Dubuque and Davenport, Iowa; Fall River, Mass.; Norfolk, Neb.; Freehold, N. J.; Waterburgh, N. Y.; Weldon, Greenville and Cape Lookout, N. C.; Carthagena and Jacksonburg, Ohio; Wantoma and Milwaukee, Wis.; Louisville, Ky.; Denison, Texas; Savannah and Tybee Island, Ga.; Fort Gibson, Ind. Ter.; St. Louis, Mo.; Duluth, Minn.; Santa Fe, N. Mex.; Visalia, Cal. 11th, Southington, Conn.; Fall River, Mass.; Corning, Mo.; Freehold, N. J.; Carthagena and Jacksonburg, Ohio; Greencastle, Pa.; Hampton, Va.; Santa Fe, N. Mex.; Wantoma and Milwaukee, Wis.; Savannah and Tybee Island, Ga.; Fort Gibson, Ind. Ter.; Dubuque and Davenport, Iowa. 12th, Southington, Conn.; Simmerset, Mass.; Philadelphia, Pa.; Hampton, Va.; Savannah and Tybee Island, Ga.; Keokuk, Iowa. 13th, Melissa, Tex.; Keokuk and Davenport, Iowa; Leavenworth, Kan.; St. Louis, Mo. 14th, Flushing, N. Y.; St. Louis, Mo.; Melissa, Tex. 15th, Vevay, Ind.; Dubuque and Davenport, Iowa. 16th, Atco, N. J.; Corning, Mo.; Davenport, Iowa. 18th, Monticello, Iowa; Freehold, New Jersey. 19th, La Crosse, Wisconsin. 20th, Summit, Colorado. 21st, Auburn, New Hampshire. 22nd, Monticello, Iowa. 23rd, Anna, Ill.; Point Pleasant, La. 24th, Independence, Iowa; Weldon, N. C. 25th, Fayette, Miss. 26th, Como, Ill.; Woodstock, Md.; Freehold, N. J.; Philadelphia, Pa.; Dubuque, Iowa. 27th, Southington, Conn.; Woodstock, Md.; Litchfield, Mich.; Weldon, N. C.; Indianapolis, Ind. 28th, Emerson, Neb.; Waterburgh, N. Y.; Leavenworth, Kan. 29th, Anna, Ill.; Woodstock, Md.; Corning, Mo.; Waterburgh, N. Y.; Tybee Island, Ga.; Davenport, Iowa. 30th, Southington, Conn.; Vevay, Ind.; Clear Creek and Emerson, Neb.; Tybee Island, Ga. 31st, Fayette, Miss.; Hulmerville, Pa.; Davenport, Iowa.

Zodiacal Light.—Monticello, Iowa, 2nd, 3rd, 4th, 5th, 8th, 9th, 10th, 13th and 14th; Savannah, Ga., 3rd, 6th, 7th, 26th, 27th, 29th and 31st.

Earthquakes.—Michigan, 17th, Detroit, 11 A. M., slight earthquake-shock in western portion of city. Redford, about 10:50 A. M., shock of one minute duration; seemed to come from a southwesterly direction. Greenfield, "shock resembled sound of a double clap of thunder under ground, lasting about one minute, causing houses to tremble, horses plowing stopped immediately, sky perfectly clear and weather hot." Livonia, 11 A. M., lasting about thirty seconds, direction northeast; "at first like a heavy clap of thunder and then rolled like a heavy train of cars." California, Campo, 17th, 7:30 P. M., heavy shock, lasting fifteen seconds; loud rumbling, pictures thrown from walls. New Jersey, Florence, 10th, shock lasting several seconds, accompanied by dull rumbling sound.

The Weather Review for May gave a description of the earthquake-wave of the 9th and 10th; later advices show that this wave reached New South Wales on the 11th of May. At 5h., 20s., a. m., (Australian time,) the tide-gauge at Fort Denison recorded the first of a series of waves. The oscillations continued through the day and reached their maximum at 2 p. m., the height then being three feet six inches. It is also reported that similar waves were felt at New Zealand, the maximum height being six feet.

Volcanic Eruptions.—Advices from Kilauea, Hawaii, state that the lake which a few weeks ago was empty is now full of activity and filled with molten lava.